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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/757,583 | 01/11/2001 | Masahiko Matsudo | 33082M065 | 8388 |

7590 05/14/2002

Smith, Gambrell & Russell, LLP, Beveridge,
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EXAMINER

BRAIRTON, SCOTT A

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 05/14/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------|----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/757,583 | MATSUDO ET AL. |
| | Examiner | Art Unit |
| | Scott A Brairton | 2823 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-15 is/are pending in the application.
 - 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) 1-7 is/are allowed.
- 6) Claim(s) 8, 12 and 15 is/are rejected.
- 7) Claim(s) 9-11, 13 and 14 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on ____ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

| | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 8 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Doshi et al (U.S. Patent No. 6,277,720).

Doshi et al discloses in figures 1-3k and related text a method for preparing a gate electrode/wiring, which comprises a step of depositing a tungsten silicide layer (3a, 24) on a polysilicon layer (figure 3a, 22); a step of depositing a silicon layer (figure 3a, 26) on said tungsten silicon layer; and a side wall oxidizing step (col. 7, lines 55+) of forming a silicon oxide film (figure 3a, 11) on a side wall of a gate electrode/wiring layer including said polysilicon layer and said tungsten silicide layer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2823

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doshi et al in combination with Divakaruni et al (U.S. Patent No. 6,346,734).

Doshi et al discloses in figures 1-3k and related text a method for preparing a gate electrode/wiring, which comprises a step of depositing a tungsten silicide layer (3a, 24) on a polysilicon layer (figure 3a, 22); a step of depositing a silicon layer (figure 3a, 26) on said tungsten silicon layer; and a side wall oxidizing step (col. 7, lines 55+) of forming a silicon oxide film (figure 3a, 11) on a side wall of a gate electrode/wiring layer including said polysilicon layer and said tungsten silicide layer.

Doshi et al fails to disclose a short time annealing step carried out between said depositing and oxidizing steps.

Divakaruni et al discloses in figures 1-5 and related text a method of annealing a gate stack carried out between depositing and oxidizing steps (col. 4, lines 35-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Divakaruni et al with the method of Doshi et al in order to prevent anomalous tungsten silicide oxidation that can occur in its absence during the subsequent formation of sidewall spacers (col. 4, lines 50+).

Allowable Subject Matter

Claims 1-7 are allowed. The following is an examiner's statement of reasons for allowance: None of the Prior Art of record discloses a method of depositing a tungsten silicide layer using a phosphorus containing gas as claimed by the instant application.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 9-11, 13 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Brairton whose telephone number is (703) 605-4213. The examiner can normally be reached on M-F, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4082 for regular communications and (703) 746-4082 for After Final communications.

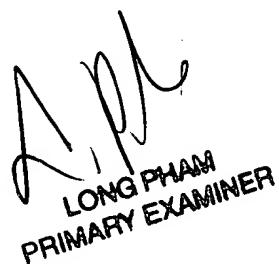
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Scott A Brairton
Examiner
Art Unit 2823

sab
May 7, 2002



LONG PHAM
PRIMARY EXAMINER